4.0 INTEGRATED NATURAL RESOURCES MANAGEMENT

PROPOSED ACTIONS AND ALTERNATIVES

The first step in biodiversity protection is to keep an inventory. An inventory, as used here, is an itemized list or catalogue of components of an ecosystem. This process has been ongoing for many years on Rock Creek Reserve.

Monitoring tracks trends (or absolute numbers if needed) of individual species or higher associations of species, such as vegetation cover types or plant communities. Monitoring is generally performed on a regular basis and often targets species with high economic or human-use values, sensitive species, and/or indicator species of overall ecosystem health.

DOE inventories and monitors soil, water, and priority plant and animal species and habitats. Both inventory and monitoring data are used to evaluate general and site-specific ecosystem integrity.

This chapter discusses the inventory, monitoring and management options identified for use on Rock Creek Reserve for each natural resource category.

The "no action" alternative as described under each separate resource area would be to manage natural resources on Rock Creek Reserve (both 800 acres and under the expanded boundary proposal) as they are managed currently. The preferred action is sometimes the continuance of the current management practice, or "no action" and is designated as such throughout this section under the heading Preferred Action: No Action. See Section 1.3.2 for clarification on the use of these terms.

4.1 SOILS INVENTORY, MONITORING AND MANAGEMENT

Soils monitoring and management is very closely related to the monitoring and management of vegetation. Soils have been inventoried across Rocky Flats, including Rock Creek Reserve, as part of the Site's existing soil monitoring program. Soils were also mapped by the Natural Resources Conservation Service as part of a soil survey of the Golden, Colorado area (Fig 3).

4.1.1 Soils Inventory and Monitoring

Preferred Action: No Action

Soils have been inventoried, and monitoring will continue as currently accomplished through vegetation management in accordance with the Annual Vegetation Management Plan, the Natural Resource Management Policy, and the Vegetation Management Environmental Assessment.

Options Considered But Not Selected

A range of options from no monitoring of the existing soils to comprehensive, frequent monitoring would be accomplished under this alternative. Soils could be monitored extensively, but is not currently necessary for the purposes of this Plan. This option is not considered feasible at this time. No legal requirement exists for soil monitoring in Rock Creek Reserve, and currently available data are sufficient to support the objectives of this Plan.

4.1.2 Soils Management

Proposed Action

- Implement the enhanced noxious weed control integrated strategies that prevent soil erosion through enhancement of native vegetation as described in Section 4.4.2.
- Continue to implement the Annual Vegetation Management Plan which identifies watershed improvement strategies and best management plans, such as check dams, revegetation, and reseeding actions, to retard erosion across the entire Site.
- Soil erosion that occurs along roads will be diminished through the continued use of water turnouts (shallow trenches) water bars and barriers (e.g. straw bales) to divert the flow from the eroded road edges to the adjacent open areas.
- Cooperate with other agencies for their expertise in erosion control and prevention. Establish cooperative efforts to share expertise through Rock Creek Reserve site visits, evaluation and recommendations.

Options Considered But Not Selected

Construction of erosion control devices, such as earthen berms, or dams, etc. are not considered necessary for Rock Creek and its tributaries. Construction of these devices could also cause negative impacts to the federally-listed threatened Preble's meadow jumping mouse. Impacts could include direct mortality, harassment, and destruction of habitat and mouse hibernation dens.

No Action

No action would consist of the current erosion control methods, without implementing the enhanced weed control strategies, mitigation, and cooperative efforts with other agencies. No action would control soil erosion for an unknown period of time, but would increase soil erosion over the long run through the indirect impacts of severe weed infestations.

4.2 WATER INVENTORY, MONITORING AND MANAGEMENT

4.2.1 Surface Water/ Wetlands Inventory and Monitoring

The 6,266-acre Site has approximately 1,100 wetlands covering approximately 191 acres that were identified and mapped in the 1994 Rocky Flats Plant Wetlands Mapping and Resource Study (Fig. 4). Preliminary data shows no contamination in the Rock Creek Reserve (Section 2.1.7). Sampling has been proposed to ensure that Rock Creek's water resources are not diminished.

Proposed Action

Quantity

- Observe areas where ground water is "daylighting", i.e. pools or seeps, for changes in water levels not associated with climatic conditions.
- Install additional guaging if field observations indicate the need to do so.
- Determine current in-stream flows supporting riparian communities on Rock Creek.
- Determine the minimum in-stream flows necessary to continue supporting these riparian communities.

Quality

- Determine if any undesirable run-off is entering Rock Creek by sampling for water quality parameters indicative of water quality impacts, such as increased siltation and presence of undesirable chemicals.
- Perform additional benthic macroinvertebrate sampling to compare to the 1991 Baseline Characterization study.

Options Considered But Not Selected

Other options considered include a more comprehensive sampling regime for the waters of Rock Creek. The existing data, however, do not suggest that this is necessary. A complete aquatic insect study (including collection of adults) was considered. However, larval forms are considered adequate for sampling on Rock Creek. Past benthic macroinvertebrate sampling has shown an abundance of larvae that require clean water to complete their life cycles. Sampling for pollutants that are not normally associated with the kinds of activities with potential to impact Rock Creek are not being considered at this time. No known contaminated sites occur in Rock Creek Reserve that would warrant increased monitoring of surface water and runoff.

No Action

No action (no monitoring of water quantity and quality) has the potential for damage to wetlands, riparian areas and aquatic fauna through potential contamination and/or siltation going undetected. Decreased amounts of surface water flows to support the riparian communities could also go undetected if monitoring is not done. The sustained quantity and timing of streamflows in riparian ecosystems is essential to support the riparian plant and animal communities.

4.2.2 Surface Water/Wetlands Management

Rock Creek has been identified as a high-quality wetland complex. The primary management concerns are sustaining species diversity, genetic diversity, cover, productivity of the native plant species, and preservation of the animal populations using these areas. Two main concerns with the potential for impacts to surface water and wetlands on the Rock Creek Reserve have been identified: noxious weed spread and control, and adjacent land activities. These have the potential to affect both the quantity and quality of surface water and wetlands. Noxious weed management is discussed in Section 4.4.2.3.

Wetlands are already protected under many existing laws and policies. Section 404 of the CWA, 10 CFR, Part 1022, Compliance with Floodplain/Wetlands Environmental Review Requirements; Executive Order 11990, Protection of Wetlands; and Executive Order 11988, Floodplain Management. The Site has a Site-Wide Wetland Comprehensive Plan (February 1997) and a Wetlands Identification and Protection Procedure (January 3, 1997) that provides instructions for identifying jurisdictional wetlands at the Site and ensuring the protection of these wetlands.

The Site goal for wetlands mitigation, identified in the Memorandum of Agreement (MOA) for the Administration of a Wetland Bank at the Site between DOE RFFO, EPA, the Corps, and the Service, is to achieve no overall net loss of wetland functions and values [e.g., wildlife habitat, critical habitat for endangered species, flood control, water quality improvement, and groundwater recharge], resulting from Site activities. This MOA describes how the Site will account for wetland impacts for a portion of potentially impacted wetlands using a mitigation bank established and maintained by DOE, Rocky Flats Field Office.

Preferred Action: No Action

- Continue with the current actions for surface water/wetlands protection.

Surface water management options for water quality and quantity are not considered necessary at this time for Rock Creek Reserve. It is not considered necessary based on these assumptions:

- The herbicide applications were conducted in accordance with applicable laws, regulations and label instructions and requirements.
- No known contaminated sites occur on Rock Creek Reserve.
- Surface water quality and quantity are not currently being impacted.

If the implementation of the monitoring actions proposed in Section 4.2.1 show any of the above assumptions to be incorrect, mitigation measures will be formulated and implemented if necessary.

Options Considered But Not Selected

Other options, such as enlarging wetlands and increasing surface water flows, are not feasible at this time for the purposes of this Plan, but may be considered as the future re-use and ownership of the Site is discussed and ultimately determined. Current data do not suggest the necessity for any of those options at this time, and they could directly impact Preble's meadow jumping mouse and/or its habitat adversely through construction of diversion structures, dams, and excavations.

4.2.3 Groundwater Inventory and Monitoring

Groundwater on Rock Creek Reserve is currently monitored for water levels in several locations (Fig 10). Groundwater is extensively monitored on the rest of the Site.

Reduction of ground water discharge into surface channels would lead to a significant loss of stream wetlands. Interruption of ground water flow to the seep wetlands by excavation and subsequent filling should be avoided as should activities that could reduce recharge of the aquifer. Lining of water supply

canals, or tighter regulation of flows through the canals, could result in less recharge to shallow aquifers in the Rock Creek drainage.

Proposed Action

Quantity

- Review monitoring data from existing monitoring wells in Rock Creek Reserve to determine water level consistency.
- Measure seep areas to aid in assessing groundwater level changes not associated with climatic conditions.

Quality

- Sample existing groundwater monitoring wells located in Rock Creek Reserve for herbicides and other chemicals.

Options Considered But Not Selected

No contaminated sites have been identified within the boundaries of Rock Creek Reserve that require monitoring. A comprehensive groundwater monitoring program on Rock Creek Reserve would not be justified at this time. Groundwater monitoring options in addition to the proposed action are not considered necessary at this time.

No Action

There is no legal requirement for groundwater monitoring on Rock Creek Reserve. However, the no action alternative could result in negative impacts to groundwater if monitoring is not implemented. Impacts to groundwater would be observed by staff during other field activities, at which time the impacts could already be negatively affecting water quality and/or quantity.

4.2.4 Groundwater Management

Preferred Action: No Action

Groundwater management is not required currently for Rock Creek Reserve. It is not considered necessary based on these assumptions:

- Groundwater quantity is not impaired.
- Groundwater quality is not impaired.
- The herbicide applications were conducted in accordance with applicable laws, regulations and label instructions and requirements.
- No known contaminated sites have been identified on Rock Creek Reserve.

If the implementation of the monitoring actions proposed in Section 4.2.3 show any of the above assumptions to be incorrect, mitigation measures will be formulated and implemented if necessary.

Options Considered But Not Selected

At this time, other groundwater management options, such as pump and treat systems for contaminants, barrier systems, etc., are not considered necessary, and are not justified for Rock Creek Reserve.

4.3 AIR QUALITY INVENTORY, MONITORING AND MANAGEMENT

This section has combined the Inventory, Monitoring and Management subsections for ease of reading and to simplify the organization of the section.

Site air monitoring activities assist in protecting the public and the environment by detecting and tracking any impact of Site operations on air quality at and near the Site. This includes characterizing any airborne materials that may be introduced and the meteorological conditions that influence their transport and dispersion. Data are used to plan, implement, and assess the effects of Site activities, including operations, construction, and decommissioning; to maintain emergency preparedness; and to demonstrate compliance with relevant regulations.

Preferred Action: No Action

- Air quality inventory, monitoring and management on Rock Creek Reserve are done in accordance with existing Site policy. Fugitive dust (PM-10 and TSP, described in Section 3.3.1.4) is not currently a concern on Rock Creek Reserve. Air quality is also monitored through implementation of the Annual Vegetation Management Plan. Proposed actions within this Plan with the potential to impact air quality were analyzed and documented in the 1998 Vegetation Management Environmental Assessment and Finding of No Significant Impact.

Options Considered But Not Selected

Air quality monitoring is currently done as determined by regulation and other agreement. Increased monitoring would be unnecessary as the current level of monitoring is based on statistical requirements for accuracy. At this time, air quality management options are not applicable. Management of fugitive dust such as dust suppressant on roads and prohibiting traffic are not necessary to control dust since traffic is minimal and fugitive dust is not currently a concern on Rock Creek Reserve.

4.4 BIOLOGICAL RESOURCES INVENTORY, MONITORING AND MANAGEMENT

4.4.1 Vegetation Inventory and Monitoring

Preferred Action: No Action

- Continue with the current ecological monitoring program as documented in the Annual Vegetation Reports for the Rocky Flats Environmental Technology Site.
- Continue to update the vegetation inventory (including herbarium mounts) as new species are found during surveys, including site-specific surveys, sensitive plant species surveys, and other projects.
- Continue to maintain the plant species database.

Options Considered But Not Selected

There is no legal requirement to maintain a vegetation inventory. Thus, the option to do no additional work maintaining and expanding this inventory is viable. At the other extreme, DOE could expend a great deal of effort specifically developing a more complete vegetation inventory. The current level of inventory adequately supports the overall need for vegetation inventory and monitoring, as well as the goals of this Plan, making that option unjustifiable and unnecessary.

4.4.1.1 Sensitive, Threatened and Endangered Species Inventory and Monitoring

Sensitive species and plant communities are monitored on an annual basis as part of the ecological monitoring program. Rocky Flats has supported periodic monitoring and surveying for Ute Ladies Tresses Orchid and Colorado Butterfly Weed. Neither of these endangered plants has been found on Site. Intensive surveys were conducted two consecutive years, 1993 and 1994 (Report of Findings, Ute Ladies'-Tresses and Colorado Butterfly Weed Surveys, 1994). Monitoring will continue informally, in conjunction with other, annual surveys.

Proposed Action

There are populations of Ute Ladies Tresses Orchid and Colorado Butterfly Weed in Boulder and Jefferson Counties. Suitable habitat exists on Rock Creek Reserve, especially in the seeps that feed Rock Creek. Noxious weed control efforts may have allowed plants that have gone undetected in the past to have better establishment. Surveys for other species, including candidate species with potential to occur on Rock Creek Reserve, will be conducted as appropriate.

- Conduct formal surveys for Ute Ladies Tresses Orchid and Butterfly Weed in years following enhanced weed control and prescribed burning. Conduct limited burn in wetland areas where thatch has built up in great proportions, inhibiting plant growth. Ute Ladies Tresses Orchid is often discovered after a burn regime.
- Continue informal surveys in subsequent years.
- Prepare annual reports on formal survey results for the Service.
- Continue to monitor areas critical to sensitive plant and animal species.
- Survey for state-listed plant species on Rock Creek Reserve to the degree possible with available funding.

Options Considered But Not Selected

The option to do no additional work surveying for Ute ladies' tresses orchid and Colorado butterfly weed is viable. At the other extreme, DOE could expend a great deal of effort and funds specifically surveying for these plants on a yearly basis. Periodic surveys every few years are considered adequate to detect the species' presence, especially since noxious weed control may take several years. Frequent surveying also has the potential to impact sensitive areas from trampling, disturbing wildlife, etc.

No Action

If additional formal surveys are not conducted, presence of Ute ladies' tresses orchid or Colorado butterfly weed would only be detected by a fortuitous sighting. The potential exists for small populations to go undetected. These populations would not add to the recovery and de-listing efforts for the species (since they would be unknown) and could potentially be harmed in the short term by some weed control activities that would take place in potential habitat (especially herbicide applications).

4.4.1.2 Noxious Weeds Inventory and Monitoring

Noxious weeds have been identified and mapped across the entire site, including Rock Creek Reserve (Figs. 6,7,8). Ten years ago, there was little diffuse knapweed in the Buffer Zone; now, this Colorado-listed noxious weed inhabits approximately 2300 acres of the Buffer Zone. The most recent report, the 1999 Annual Vegetation Report, describes dalmatian toadflax as currently being the most pervasive noxious weed, infesting over 2500 acres of the Buffer Zone.

The 1999 report also describes the impacts of the 1997 herbicide application on the Site, including some areas of Rock Creek Reserve. The results have so far been favorable, and will be used to refine future management techniques.

Preferred Action: No Action

The current inventory and monitoring programs for noxious weeds provide a comprehensive database for Rock Creek Reserve and the entire Site. The Annual Vegetation Reports are complete and contain maps with the most recent identifications and distributions of noxious weed infestations. Weed infestations in the region with the potential to impact Rock Creek Reserve and the Site are identified through coordination with State and County weed experts.

Options Considered But Not Selected

The current inventory and monitoring process provides an excellent source of information on noxious weeds and is currently a very useful tool for land managers. A more intense inventory and monitoring program would not add to the existing program enough to justify the dedication of resources. At this time, other management options are not applicable.

4.4.2 Vegetation Management

The Natural Heritage Program, DOE and USFWS have identified the primary threat to all native plant communities on Rocky Flats, including the Rock Creek Reserve, to be the displacement of the native vegetation by noxious, invasive weeds. The management strategies for all the native plant communities therefore focus on management of noxious weeds. Noxious weed control is discussed more thoroughly in Section 4.4.2.3. Existing vegetation management plans and policies include the 2000 Integrated Weed Control Strategy for the Rocky Flats Environmental Technology Site (Kaiser-Hill), the 1998 Vegetation Management Environmental Assessment (Kaiser-Hill) and the 2000 Annual Vegetation Management Plan for the Rocky Flats Environmental Technology Site (Kaiser-Hill).

4.4.2.1 Plant Communities

Plant communities found on Rock Creek Reserve, the remainder of the Site, and declining across the region, were identified by CNHP as sensitive areas in need of protection. For purposes of this Plan, they are listed here as the xeric tallgrass prairie, tall upland shrubland, and riparian woodland/shrubland.

4.4.2.1.1 Xeric Tallgrass Prairie

Proposed Action

- Increased noxious weed control, especially diffuse knapweed and dalmatian toadflax (see Section 4.4.2.3).
- Continue removal and rehabilitation of unnecessary roads and fences to lessen the genetic and reproductive impacts from fragmentation of the grasslands. Determine if any fences should remain as catchment devices for diffuse knapweed (a tumble weed).
- Implement approved prescribed burning, including vegetation monitoring consistent with the Vegetation Management Environmental Assessment and Section 4.6.2.. The monitoring of fire effects is necessary to evaluate community response and quantify vegetation trends over time. Pre- and post-fire monitoring, particularly in the xeric tallgrass prairie areas, is needed to assess impacts from fire to that plant community. The use of fire in tandem with weed control methods to reduce the distribution of the exotic weeds is another benefit that may be realized from pre- and post-fire research on Rock Creek Reserve.
- Continue to participate in regional approaches to tallgrass prairie conservation.

Options Considered But Not Selected

Considerable resources could be dedicated to a wide range of options. Examples include attempting to eradicate (completely remove) all noxious weeds, closing all roads through the area or seeding and watering on a large scale. The benefits compared to cost of these options are questionable, and probably impossible to achieve in the case of weed eradication, since these weeds occur across the region. Negative environmental impacts could also arise from a weed eradication process, which would probably require large amounts of herbicides. Increased use of herbicides affects non-target plant species and could impact water resources.

No Action

The no action alternative would consist of the current management, including prescribed burning, for the xeric tallgrass prairie, as outlined in the existing management plans (listed in Section 4.4.2). Although this would adequately manage the prairie in the short term, the benefit from the increased noxious weed control of the proposed action would not be realized, and the grasslands could suffer in the long run.

4.4.2.1.2 Tall Upland Shrubland

Proposed Action

Management of the tall upland shrubland includes:

- Increased noxious weed management (see Section 4.4.2.3).
- Evaluate impacts to the groundwater seeps that are important for the survival of this plant community.
- Remove dead knapweed through use of prescribed fire, described in Section 4.6.3. Build up of brush from dead knapweed was identified by Site ecologists and the CHNP as one cause for damage to the tall upland shrubland. High winds once blew a great amount of dead knapweed into the tall upland shrubland, and consequent shading damaged some of the plant community. This has already been abated through the current weed control practices. Perform thinning, if necessary, for wildland fuel hazard reduction and also to improve wildlife habitat.
- Implement approved prescribed burning, including vegetation monitoring. The monitoring of fire effects is necessary to evaluate community response and quantify vegetation trends over time. Data collection and analyses will provide an understanding of ways to protect and/or enhance natural ecosystems. Past occurrences of fire in the tall upland shrubland have shown beneficial effects to the plant community. The use of fire to help reduce the distribution of noxious weeds is another beneficial action that may be realized from pre- and post-fire research on Rock Creek Reserve.

Options Considered But Not Selected

Considerable resources could be dedicated to a wide range of options. Examples include attempting to eradicate (completely remove) all noxious weeds that impact the tall upland shrubland, or increasing availability of groundwater upon which the seeps depend through unnatural means. The benefits compared to cost of these options are questionable, and probably impossible to achieve in the case of weed eradication. Negative environmental impacts could also arise from a weed eradication process, which would probably require large amounts of herbicides. Increased use of herbicides affects non-target plant species and could impact water resources.

No Action

The no action alternative would consist of the current management for the tall upland shrubland, as outlined in the existing vegetation management plans (see Section 4.4.2). Although this would probably adequately manage this rare plant community in the short term, the benefit from the increased noxious weed control efforts outlined in the proposed action would not be realized, and the tall upland shrubland could suffer in the long run.

4.4.2.1.3 Riparian Woodland and Shrubland

Noxious weeds are considered the primary threat also to the riparian plant communities. The riparian woodland had only 73 percent native species as reported in the Terrestrial Vegetation Survey (1993-1995) for the Rocky Flats Environmental Technology Site (Kaiser-Hill). This plant community accounted for the highest number of species (species richness) of the plant communities. This community provides important habitat for the federally-listed, threatened Preble's meadow jumping mouse.

Proposed Action

- Increased noxious weed control efforts, especially Canada thistle.
- Evaluate planting cottonwoods or other native vegetation in strategic areas to enhance the benefits the trees provide to the riparian area, including the negative effect that shading would have on diffuse knapweed.
- Evaluate impacts to the surface water flows that are important for the survival of this plant community.

Options Considered But Not Selected

Considerable resources could be dedicated to a wide range of options. Examples include attempting to eradicate (completely remove) all noxious weeds affecting this plant community, or enlarging the riparian corridor through increasing in-stream flows. The benefits compared to cost of these options are questionable, and probably impossible to achieve in the case of weed eradication, and the lack of available water to increase the in-stream flows. Negative environmental impacts could also arise from the eradication process, which would probably require large amounts of herbicides in an aquatic system. Enlarging the existing riparian corridor could have negative impacts on the established vegetation and small mammal communities currently residing there, including the federally-listed, threatened Preble's meadow jumping mouse.

No Action

The no action alternative would consist of the current management for the riparian plant communities, as outlined in the existing vegetation management plans (see Section 4.4.2). Although this would probably adequately manage these communities, the benefit from the increased noxious weed control of the proposed action would not be realized, and the diversity of the riparian plant communities could suffer.

4.4.2.2 Sensitive, Threatened and Endangered Species

No threatened or endangered plant species as defined by the Endangered Species Act have been identified in surveys conducted on Rock Creek Reserve. Two federally-listed plants that are found in the region and have potential habitat on Rock Creek Reserve, but were not found in surveys are the Ute Ladies Tresses Orchid and the Colorado Butterfly Weed. If these plants are found in future surveys, management strategies will be formulated at that time. The introduction of these threatened or endangered plant species on Rock Creek Reserve will be considered in the development of recovery plans for these species. A draft recovery plan for Ute Ladies' Tresses Orchid is currently under review by the Service. Recovery plans are developed with public participation, and public concerns are addressed in the process. Sensitive plant communities and species will be managed according to the discussions above.

4.4.2.3 Noxious Weeds

An Integrated Weed Control Strategy is currently applied at the Site including biological controls, mechanical controls, chemical controls, use of weed-free seed and mulch, and prompt revegetation of disturbed sites. The Site also has an Annual Vegetation Management Plan that addresses weed control methods, target species, and treatment areas to direct weed control efforts each year. Additionally, the Site has worked cooperatively with Jefferson County weed control personnel, and surrounding landowners to participate in regional weed control strategies and implement integrated weed control.

The Natural Resource Management Policy was analyzed in an Environmental Assessment in accordance with the National Environmental Policy Act. Vegetation management options and alternatives were analyzed, and the public was actively educated and involved. DOE and USFWS will continue to evaluate a range of options, including prescribed burning and herbicide spraying, and it may be necessary to use an array of techniques for long-term habitat maintenance. DOE and USFWS understand that there are some community concerns regarding controlled burns and herbicide use and will continue to address these in development and implementation of this Plan.

Prescribed burning, described in Section 4.6.2, can help control some weed species while promoting other weed species, depending upon specific conditions in each case that prescribed burning is applied. Prescribed burning, which has recently been approved, will be integrated with other weed control measures as part of an integrated weed control plan. Since Rock Creek Reserve is relatively unimpacted by radionuclide contamination (see Section 2.1.7), limited burns for native vegetation enhancement should be made available as a management option. Prescribed burning will also have a beneficial effect in reducing wildfire potential. A controlled test burn was implemented in May 2000. Data from that burn is being collected and analyzed to help make informed decisions for future burns.

The Site now controls noxious weeds in the Buffer Zone, including Rock Creek Reserve, through aerial and ground application of herbicides as part of an integrated weed management strategy. Data from 1997 herbicide plot applications are showing promising results, with the species richness of the affected plots returning to pre-application numbers by the end of 1999.

Proposed Action

The following management options will be available to land managers of Rock Creek Reserve as part of an overall integrated management strategy for noxious weeds. All options will comply with applicable laws and regulations, especially those that govern use of herbicides, prescribed burning and releases of biological control agents. If any option has the potential to impact any federally-listed threatened or endangered species, consultation on a project-specific basis with USFWS will be done in accordance with Section 7 of the Endangered Species Act.

- As part of the Annual Vegetation Management Plan, develop objectives for control of each noxious weed species with additional emphasis on non-chemical control methods.

- Use guidance in the most current Annual Vegetation Management Plan to maintain consistency and integrate with weed control efforts across the rest of the Site.
- Continue herbicide applications when necessary and subsequent revegetation to reduce weed densities incorporating strategies outlined in the most recent Bureau of Land Management (BLM) Integrated Pest Management and Pesticide Application Certification Course.
- Continue use of prescribed burns to stimulate native plant growth and reduce litter. If necessary, reseed the burned areas found on steeper slopes with the native plant mix (if applicable) currently used for revegetation at Rocky Flats.
- Use mechanical means and cultural practices as described in the Annual Vegetation Management Plan. This may include additional options based on research currently conducted by Colorado State University at Fort Carson, Colorado for integrated control of cheatgrass and knapweeds.
- Continue to increase the biological control efforts against Canada thistle, musk thistle, diffuse knapweed and dalmatian toadflax using strategies proven to increase the chances for establishment and control found in the most current Annual Report for Biocontrol at Fort Carson, Colorado, (Texas Agricultural Experiment Station [TAES]). Obtain as many species as possible from the lists within the Report of insect species approved for release by United States Department of Agriculture's Animal & Plant Health Inspection Service and the Colorado Department of Agriculture.
- Introduce the field bindweed mite for control of field bindweed. The bindweed mite is approved for release by the USDA and CDA, and is proven successful to help with bindweed control in Texas.
- Enter into cooperative agreements with other agencies to redistribute approved biological control agents established on other federal lands in the region.

Options Considered But Not Selected

Other management options include the reliance on any one of the above control measures, without an integrated approach. In the case of mechanical and chemical controls, the benefits compared to costs are questionable since these are generally short term control measures that must be used in conjunction with other measures to provide long term control. Negative environmental impacts could result from some of them, especially overuse of herbicides. Prescribed burning indirectly controls noxious weeds by promoting native plant vigor and must also be used in conjunction with other control measures. Too much use of prescribed burning can have negative impacts to plants and soil. Grazing/ browsing with goats is an option that has been analyzed and discarded because of the damage goats can do if not intensely managed. The potential exists for goats to transport noxious weeds by seeds and plant parts to uninfested areas. At this time, it is felt the potential negatives to the Site's sensitive plant communities outweigh the potential benefits, especially in the riparian and seep areas.

No Action

The no action alternative would keep the noxious weed management exactly as it exists currently. Although this would provide some noxious weed control, the enhanced efforts of the proposed action would not be implemented, and noxious weeds could increase in the long run. The sensitive and unique plant communities of Rock Creek Reserve would be impacted, thereby impacting all the other elements of the ecosystem that depend on them.

4.4.3 Faunal Inventory and Monitoring

4.4.3.1 Species Resident or Transient on Site (including mammals, birds, fish, reptiles, amphibians and invertebrates)

Preferred Acton: No Action

- Monitoring and inventorying faunal species will continue in accordance with current management plans, including the Ecological Monitoring Program, as documented in the Annual Wildlife Survey Reports. Existing monitoring and inventory meet, and exceed in many cases, the level necessary to make informed management decisions.
- Continue to add to the faunal baseline inventory using observations and data from other field projects.

Options Considered But Not Selected

A higher level of monitoring and inventory is not considered necessary, and would be a costly alternative. Current monitoring programs adequately support the goals of this Plan. Depending on the methods used, there would be the potential for actual harm to a sensitive ecosystem such as that found in Rock Creek. Increased frequency of monitoring would cause trampling in sensitive plant communities and the potential to spread noxious weeds. Harassment of birds during nesting season causing nest abandonment could occur.

4.4.3.2 Sensitive, Threatened and Endangered Species

The Site, due to its geographic position between the Great Plains and the Front Range of the Rocky Mountains, includes a great diversity of terrain and provides a wide variety of wildlife habitats. The wide range of habitats provides year-round and seasonal habitat for a large number of wildlife species, including threatened, endangered, and other special-concern species. To facilitate monitoring the status of sensitive species, DOE maintains a list of such species that have the potential to occur at the Site. The Ecological Resource Management Plan, 1998 NRMP, and current Preble's Protection Policy (Appendix 6) for the Site identify Site management concerns, monitoring approach, and management strategies for threatened and endangered species. Monitoring data are reported in the Annual Wildlife Survey Report for the Site. Sensitive species will be managed according to the discussions above. Only federally-listed threatened or endangered species will be discussed here.

Preferred Action: No Action

Monitoring and inventorying threatened and endangered species, currently only the Preble's meadow jumping mouse, will continue in accordance with current management plans, including the Ecological Monitoring Program and Preble's Protection Policy. Existing monitoring and inventory meet, and exceed in many cases, the level necessary to make informed management decisions.

Options Considered But Not Selected

A higher level of monitoring and inventory is not considered necessary, and would be a costly alternative. Depending on the methods used, there would be the potential for harassment and harm to threatened and endangered species, currently only Preble's meadow jumping mouse, found in Rock Creek riparian habitat. Increased trapping and handling of mice could increase mortality. Indirect impacts through

trampling of habitat and spreading noxious weeds could occur.

4.4.4 Faunal Management

Much of the faunal species management on Rocky Flats is directed towards listed species, primarily due to compliance requirements. Fortunately, measures for listed species also benefit many other species of plants and wildlife on the Site.

Fauna is managed mainly through habitat management. This is accomplished through wetlands management, plant community management, wildland fire management, erosion control, and noxious weed control. Those and other related activities are described in their corresponding sections of the plan.

4.4.4.1 Large Mammals

Large mammals present on the Site, including Rock Creek Reserve, are resident populations of mule deer, white-tailed deer, and occasionally mountain lion, bear and elk. These mammals out-migrate to some extent, and known individuals have often been observed off the Site. The only large predator that is resident is the coyote. Management strategy for deer and elk is a habitat-based approach depending on management of the plant communities these animals depend on. Studies show that coyote use of mule deer for food at Rocky Flats appears to be low during the summer and probably limited to fawns. This low utilization may be the result of availability of other coyote food such as voles (Ribic, 1978). Inventory and monitoring projects for mammals are described in Section 4.4.3.1. Protection and management of threatened and endangered species are important to the management and protection of mammals in general on Rock Creek Reserve.

Preferred Action: No Action

- Use measures established for federally-listed species to also provide protection for other mammals that occur on Rock Creek Reserve.
- Continue policy of coordination with Colorado DOW to control populations of large mammals if necessary.

Options Considered But Not Selected

Rocky Flats is not legally required to specifically manage non-federally-listed species. Thus, programs for mammals in general are not required to be implemented. However, most of Rock Creek Reserve and Site management programs and policies have positive effects for non-federally-listed species, including large mammals. Other management options include intensive management for large mammals through methods such as hunting, trapping, predator control, relocation, and species-level management. Hunting and trapping are not applicable at this time for previously discussed mission and security reasons. There is no indication that large mammals require, or will require in the foreseeable future, any kind of intensive management, such as culling.

4.4.4.2 Small Mammals

Proposed Action

- Install bat houses in strategic locations to provide increased roosting areas and shelter for bats.

Options Considered But Not Selected

Intensive management for small mammals through methods such as predator control, trapping and relocation, planting additional food sources, supplying an artificial food source such as cracked corn, and species-level management were considered. These options all have the potential for ecosystem harm and negative impacts on biodiversity through management strategies that fail to consider the ecosystem as a whole. Predator/prey relationships could be upset. Feeding and planting additional food sources have the potential to cause population fluctuations and create imbalances in the native plant communities. Another option for small mammal management that has been suggested is the use of Rocky Flats, including Rock Creek Reserve, as a refuge for displaced, relocated black-tailed prairie dogs. Rocky Flats will continue its policy of not accepting relocated prairie dogs. Both the Service and DOE are concerned about the potential for damage to sensitive grasslands and the introduction of the plague to prairie dogs that currently populate the Site. Prairie dogs do not currently populate Rock Creek Reserve, but the potential exists for them to move into the Reserve naturally. Prairie dogs that naturally migrate to Rock Creek Reserve are not expected to require population control, as these measures have never been necessary in the past, due to a healthy predator/prey balance. A large, sudden influx of prairie dogs through relocations could disrupt the natural predator/prey relationship which exists on Rock Creek Reserve.

No Action

Not installing bat houses would not allow for increased roosting areas and shelter for these sensitive species that occur on Rock Creek Reserve, such as the small-footed myotis.

4.4.4.3 Birds

Proposed Action

- Place nesting boxes for blue birds in strategic areas of Rock Creek Reserve. Nesting boxes require regular maintenance, and will not be placed if it is determined that current staffing cannot support this. Boxes would only be placed in areas where they would not cause territorial impacts to other birds.

Options Considered But Not Selected

Rocky Flats is not legally required to specifically manage non-federally-listed species. Thus, programs for birds in general are not required to be implemented. Rocky Flats could establish intensive and extensive management strategies for birds, such as planting areas of specific food crops like sunflowers, predator control, constructing ponds for waterfowl, and other species-level management options. These options all have the potential for ecosystem harm and negative impacts on biodiversity through management strategies that fail to consider the native ecosystem as a whole. Rock Creek is not historic waterfowl habitat, and construction of habitat would be an artificial measure that would require increased surface water management to control. Installation of raptor perch poles was considered but not selected due to potential impacts of increased predation on sensitive species, either current resident species or any that

may be introduced in the future. Electrocutions from power lines is not an issue at the Site. Raptor perch poles promote the presence of those species of hawks and owls that did not evolve in the prairie ecosystem, but that have increased in numbers with the presence of manmade structures for nesting and resting.

No Action

No action would not allow for nesting areas for blue birds.

4.4.4.4 Reptiles and Amphibians

Preferred Action: No Action

- Continue the monitoring and management practices already in place for protection of wetlands and grasslands. Implementation of proposed actions for noxious weeds, groundwater and surface water monitoring and management as outlined in their respective sections in this Plan will afford added protection to amphibians and reptiles.

Options Considered But Not Selected

Rocky Flats is not legally required to specifically manage non-federally-listed species. Thus, programs for reptiles and amphibians in general are not required to be implemented. Rocky Flats could establish intensive and extensive management programs for reptile and amphibian species and their habitats through methods such as predator control, enlargement of wetland areas and species-level management. These options all have the potential for ecosystem harm and negative impacts on biodiversity through management strategies that fail to consider the ecosystem as a whole. Rock Creek has not historically had large areas of wetland habitat, and construction of wetland habitat would be an artificial measure that would require increased surface water management to control. Reptiles already benefit from the grassland and other plant community management, and increased management is not necessary.

4.4.4.5 Invertebrates

Preferred Action: No Action

- Continue the monitoring and management practices already in place for protection of plant communities. Implementation of proposed actions for noxious weeds, and sensitive plant community management as outlined in their respective sections in this Plan will afford added protection to invertebrates, and contribute to the maintenance of riparian communities, providing habitat for the hops blue butterfly, Arogos skipper and other sensitive invertebrates.

Options Considered But Not Selected

Rocky Flats is not legally required to specifically manage non-federally-listed species. Thus, programs for invertebrates in general are not required to be implemented. Planting specific host plants for sensitive species such as the hops blue butterfly was considered, or planting flowers preferred by adult lepidoptera in general and host plants for larvae. These measures could impact the sensitive plant communities and would require intense management for noxious weed invasions. Planting flowers and placement of hives

to attract bees was considered, but discarded due to intense management requirements and possible negative impacts to sensitive native plant communities.

4.4.4.6 Sensitive, Threatened and Endangered Faunal Species

Threatened and Endangered Species

Management of federally-listed, threatened and endangered species is required by the Endangered Species Act. Rock Creek Reserve currently has one resident federally-listed, threatened species, the Preble's meadow jumping mouse. The Site manages this species in accordance with the 1999 Memorandum of Agreement For Coordination Of Endangered Species Act Compliance With Activities At Rocky Flats Environmental Technology Site Between Department Of Interior Fish and Wildlife Service, Department of Energy, Environmental Protection Agency, Colorado Department of Health and Environment, and Colorado Department of Natural Resources (Appendix 8). The Preble's Meadow Jumping Mouse Protection Policy now in effect is a requirement of this agreement (Appendix 6). The Preble's Protection Policy addresses a range of programs and projects, and all aspects of remedial activities at Rocky Flats.

Preferred Action: No Action

- Continue to implement the existing Protection Policy prepared by the Site for the Preble's meadow jumping mouse, which is listed as a threatened species under the Endangered Species Act. The Preble's Protection Policy (Appendix 6) and other protection policies, plans and procedures are currently being evaluated to determine whether implementation may need to be improved, and whether modifications are needed in light of new information, developments, and related conservation efforts, including off-site studies and identified data gaps.
- Monitor off site research on federally-listed, threatened, endangered, and proposed species and their habitats that occur on the Site and use results of these research projects to improve management programs on Rock Creek Reserve.
- The proposed action listed in Section 4.2.1 to establish minimum in-stream flows for Rock Creek to support riparian habitat will benefit the continued survival of the mouse through the availability of that data as a habitat management tool.
- The proposed actions listed in Section 4.2.2 and 4.2.3 for groundwater and surface water monitoring in Rock Creek will benefit the continued survival of the mouse through the availability of that data as a habitat management tool.

Options Considered But Not Selected

Other management options would include implementing Preble's mouse habitat enhancement projects. Since the existing habitat adequately supports a viable mouse population (1999 Annual Wildlife Report, Appendix B, Preble's Meadow Jumping Mouse Study), these options are not considered necessary at this time for the Rock Creek Reserve. Projects such as enlarging riparian areas through digging, and extensive vegetation plantings could have negative short-term impacts. Trapping and moving mice from one area to another to produce new populations is an option that could have negative impacts on the individuals being relocated. Habitat enhancement projects could be proposed in the future in accordance with an approved recovery plan for the species. Those projects would be reviewed and coordinated as necessary at that

time. Recovery plans are subject to NEPA analysis and undergo public review.

Sensitive Species

Sensitive species are defined as federal or State-listed species and those documented as sensitive by the CNHP. These species along with their CNHP ranking and definitions are listed in Appendix 7. Some sensitive species are proposed within this Plan for introduction to Rock Creek Reserve. Except for federally-listed species (described in Section 4.4.4.6), these species will be managed using the same approach as used for the general vegetation and faunal management.

Proposed Action

- Coordinate with the Colorado DOW to reintroduce the Plains sharp-tailed grouse and implement monitoring. The grouse is State-listed as endangered in Colorado, but is considered abundant in other states, and is not being considered for federal listing.
- Coordinate with the DOW to introduce native, sensitive species of fish, including Iowa darter, northern redbelly dace (State listed endangered) and common shiner (State listed threatened). Implement monitoring. The purpose of this action is to establish a fishery representative of this area in its original condition, and to provide a source of these species for reintroductions elsewhere. These species are not federally-listed, nor are they being considered for proposal for federal listing.
- Remove the exotic species of fish, such as bass, using established methods currently employed by the Service, from Rock Creek wetlands such as Lindsay Pond.

Options Considered But Not Selected

Rocky Flats is not legally required to specifically manage non-federally-listed species. Thus, programs for sensitive species are not required to be implemented. Most of Rocky Flats' management programs have positive effects for non-federally-listed species due to their emphasis on habitat protection. Rocky Flats could establish intensive and extensive management programs for species of special concern and their habitats. This would however, require species-level management which could conflict with the overall goal of enhancing biodiversity on Rock Creek Reserve. Specific projects for management of introduced species are not being considered that are not already part of the goals of ecosystem level and habitat management as set forth in this Plan.

No Action

The No Action alternative would not support the biodiversity with emphasis on native species goals set forth in Section 1.2 of this Plan. Non-native fish would continue to be the predominate species, and native species would not be introduced, and would not contribute to the native biodiversity goals of Rock Creek Reserve management.

4.5 CULTURAL RESOURCES INVENTORY, MONITORING AND MANAGEMENT

This section has combined the Inventory, Monitoring and Management subsections for ease of reading and to simplify the organization of the section.

4.5.1 Archaeological Resources Inventory, Monitoring and Management

All known cultural resources at the Site have been evaluated for National Register eligibility. None were determined eligible. The Colorado SHPO has concurred with the findings. No additional evaluation is required, unless previously undiscovered resources are identified, or objects of potential scientific importance are identified. Even though all undisturbed areas within the Site, including Rock Creek Reserve, have been surveyed for cultural resources, the vegetation in some locations precludes a determination that there are absolutely no undiscovered resources.

The Site will monitor surface disturbing activities in the Buffer Zone for occurrences of undiscovered cultural resources. If any suspected cultural resources are discovered, the work will be stopped or rerouted to avoid the area. The suspected cultural resources will be evaluated for significance and managed according to Section 4.10.6 of the Rocky Flats Environmental Site Cultural Resource Management Plan (CRMP). The CRMP incorporates the information from both the archeological and industrial area surveys. The CRMP establishes guidelines regarding how to manage Site cultural resources.

Preferred Action: No Action

- Ground disturbing activities, removal of vegetation in certain areas and new erosion courses have the potential to uncover undiscovered buried deposits. Areas where any of these activities take place will continue to be monitored for cultural resources.
- Federal law prohibits commencement of federal undertakings that could impact cultural resources without undergoing the consultation process as outlined in Section 106 of the National Historic Preservation Act. The no action alternative, which is current policy, would still protect cultural resources as required by law. If any cultural remains are suspected, all activity will cease until the remains have been assessed for cultural significance.

Options Considered But Not Selected

Another option for monitoring and inventorying would be to conduct more in depth surveys than required by law, e.g., subsurface testing (testing below the surface for cultural resources before a project is implemented). This option is not necessary since the CRMP identifies the Buffer Zone as a low-density (low probability) area for cultural resources. These options could actually do harm to subsurface cultural deposits that otherwise may have been left unharmed.

No significant archaeological resources have been identified on Rock Creek Reserve. Therefore, other options for current management do not apply. If significant cultural resources are discovered in the

future, mitigation measures may range from simple avoidance of the site, to complete excavation and documentation. Avoidance and protection of sites via barriers, etc. would be the most probable management options.

4.5.2 Historic Resources Inventory, Monitoring and Management

The Lindsay Ranch is considered the only historically relevant structure on Rock Creek Reserve. While it is not listed as eligible for the Register of National Historic Places according to the National Historic Preservation Act, there is community interest in preserving the Lindsay Ranch. Suggestions have been made to reconstruct Lindsay Ranch for use as a visitors' center for Rock Creek Reserve. Since unrestricted public access to Rock Creek Reserve will not be allowed until the completion of the closure mission, the ultimate use of the ranch property cannot be determined until that time. The use of Lindsay Ranch, and public access in general, will need to be consistent with maintaining the ecological resources of Rock Creek Reserve. These issues will also be addressed in the Access and Recreation Study that is one of the proposed actions elsewhere in this Plan (Section 4.7.1). The following is proposed for the interim as other issues regarding public access and the Lindsay Ranch are being resolved.

Proposed Action

- DOE will work with interested stakeholders to determine what stabilization may be needed to prevent further degradation of Lindsay Ranch prior to closure. An assessment of the work needed to stabilize the structures and the hazards and impacts involved will be conducted first. Stabilization techniques may include replacing rotted wooden support features, protective temporary covering for the roof and windows, repairs to cracked cement foundations, removing and saving original features (doors, windows, etc.) for future use, pesticide treatments for wood destroying insects, etc. Such stabilization may be performed if funding can be made available from public and private sources. Stabilization may have short-term impacts resulting from noise and increased traffic. Care will be taken to prevent erosion and sedimentation into the Lindsay Pond. Consultation with the Service will be conducted if any planned activities have the potential to affect Preble's meadow jumping mouse habitat.

Options Considered But Not Selected

Complete restoration of the Ranch in the near term to its original condition was considered, but not selected because of the expense of such an option, and because the ultimate use of this property has not been determined at this time.

No Action

No action could negatively impact the property, especially the ranch house, allowing it to fall into such disrepair that no future rehabilitation would be possible.

4.6 LAND AND INFRASTRUCTURE MAINTENANCE

Rocky Flats has its own underground and aboveground utilities systems and supporting facilities. Except for unpaved access roads, fences and some utility lines, Rock Creek Reserve infrastructure is largely undeveloped. A landfill that was constructed and never put into use lies within the southern boundary of

the Rock Creek Reserve. Existing easements are described in Section 2.1.5.

4.6.1 Fence and Road Maintenance

There are several miles of unpaved roads on Rock Creek Reserve. Rocky Flats maintains unpaved roads in the Buffer Zone both as vehicle access and fire breaks. The Site has closed some roads to travel in order to increase prairie habitat. Also, the Site has reduced the width of road grading to 40 feet and driving vehicles off the road network is controlled to protect prairie habitat.

Proposed Action

- Initiate an Access and Recreation Study to be used as a management tool when recommending public access (roads, trails, etc.) options in the future. This study will include not only Rock Creek Reserve, but the entire Site.
- Continue to implement the existing policy that roads not necessary for access will be removed and rehabilitated through reseeding with the native vegetation found in the immediate area; these areas will be priority areas for noxious weed control.
- Roads, fences and signs that are considered necessary will continue to be maintained. Those considered not necessary will be removed.
- The Site will continue road-grading activities in Rock Creek Reserve to maintain roads and continue control of noxious weeds. The Site will minimize the width of road grading to protect prairie habitat while balancing fire control needs.
- The Site will continue to control off-road vehicle traffic.

Options Considered But Not Selected

All, or most, of the roads and fences could be removed. This would create a lack of access for those doing land rehabilitation measures, monitoring and research, causing severe negative impacts. Another option is that no roads and fences would be removed and rehabilitated, resulting in continued fragmentation of the prairie, and avenues for noxious weeds to invade and spread.

4.6.2 Fire Management Including Prescribed Fire

Wildfires at the Site, including Rock Creek Reserve, have been suppressed for many years. As a result, plant litter (dead plant material) has built up in most areas of the grasslands. This plant litter causes a number of management problems. Plant litter shades and stifles prairie plants when the accumulation builds too high, affecting the viability of such dominant species as big bluestem, little bluestem, mountain muhley, and others. This affects the viability of the xeric tallgrass prairie, mesic grasslands, and even wetlands. The thatch buildup also provides a heavy fuel load that can carry a prairie wildfire at a dangerous rate across open lands.

Grasslands at the Site evolved under conditions where fires periodically swept across the prairie every five to ten years on average. Fire is an important tool in prairie management and maintenance through removal of thatch and recycling of nutrients. Fires stimulate the growth and vigor of prairie species by releasing nutrients into the soil making them available to plants.

Prescribed Burning

The Proposed Prescribed Burn Annual Rotation Plan for RFETS (Kaiser-Hill) has been developed and submitted to CDPHE (June 30, 2000). It is based on the Vegetation Management Environmental Assessment and Annual Vegetation Management Plan and will be implemented across the Site, including Rock Creek Reserve. The U.S. Forest Service is a cooperating agency implementing prescribed burns, and specific burn plans are developed for each prescribed burn in accordance with U.S. Forest Service requirements.

Prescribed burning (fires set intentionally as part of a fire plan, a specific set of requirements and prescribed weather conditions) can be used to rejuvenate overgrown habitats, reduce fuel loads, and reduce the chance of an uncontrolled wildfire. The greater the fuel load, the hotter the fire, and (1) the greater the potential of environmental damage and (2) the more rapid spread of a wildfire to either the industrial area or neighboring lands.

Neighboring local governments, including Jefferson County and Boulder County, routinely use prescribed burning. Site environmental documents note prescribed burning is recommended for a number of highly beneficial, previously described, purposes. However, many area residents are concerned about the possibility that fires in the Buffer Zone, including Rock Creek Reserve, could spread contamination.

DOE has a limited number of rangeland fire-fighting vehicles, and the current policy is to aggressively suppress unplanned fires using the Rocky Flats Fire Department, and if necessary, support services from local fire districts, under mutual aid agreements. Mutual aid agreements with local fire districts are designed to specifically support the Site during emergencies, not prescribed burns. However, depending on the availability of local departments, these departments may be able to support the Site in conducting prescribed burning. In general, fire suppression equipment would be provided by the agency contracted to conduct the prescribed burn, in accordance with the approved burn plan. The Vegetation Management Environmental Assessment describes the planned use of fire and other management tools. It also describes the alternatives in more detail and the impacts from each alternative.

Preferred Action: No Action

- Wildfires on Rock Creek Reserve will continue to be suppressed in accordance with existing policy and mutual aid agreements.
- Prescribed burning will be used on Rock Creek Reserve, in accordance with the approved Annual Vegetation Management Plan and Vegetation Management Environmental Assessment.
- Data from the 2000 prescribed test burn on the southwestern portion of Rocky Flats will be used to determine potential impacts to human health, identify potential erosion problems, and to identify benefits to the Site plant communities.
- All prescribed burning that could affect Preble's meadow jumping mouse will be done after consultation with the Service.
- All prescribed burns will include public notification, as well as, application and receipt of a burn permit from CDPHE. The Site will conduct pre-burn environmental sampling and air monitoring during the burns as appropriate to the areas involved.

Options Considered But Not Selected

Options to introduce wild or domestic grazers such as cattle, sheep, bison were considered in an effort to effectively manage prairie plant and weed species. This alternative to prescribed fire would require intensive management including herding, fences, drift fences, electric fences, stock water sources and salt licks. Without this intensive management, damage to riparian areas and Preble's mouse habitat is likely to occur. Without intensive management, these grazers would use and damage riparian vegetation. Rocky Flats is not staff equipped or funded to implement this option. The proposed future uses of Rock Creek Reserve are not compatible with this option.

An option to use goats to control undesirable vegetation and to reduce litter was considered. For example, goats will eat noxious weeds if confined to small areas of noxious weed monocultures, but they will not selectively choose most of these weeds over more desirable native forbs. Goat browsing, like the grazing option described above, requires intensive management, such as herding and fencing. The pervasive weed and litter problem in Rock Creek Reserve is extensive, and not isolated to certain areas. To control undesirable vegetation in Rock Creek Reserve many goats would be required. This option is not consistent with the intended use of the Rock Creek Reserve for native species. Rocky Flats is not staffed, equipped or funded to implement this alternative. The potential for damage to riparian and other sensitive plant communities exists with this option.

4.7 SOCIOECONOMICS

There are no known socioeconomic issues associated with Rock Creek Reserve management for the duration of this Plan. This section describes the public use parameters that will be in effect for the duration of this Plan. Expansion of the Rock Creek Reserve, public use studies, and contaminants studies are presented as proposed actions here based on their relationship to public use. Although this Plan does not contain figures for monetary value for preserving natural resources associated with Rock Creek Reserve, there are studies that attempt to establish those values. There are both tangible and intangible values to surrounding communities for having adjacent, or nearby, open space lands.

4.7.1 Public Use

Notwithstanding necessary restrictions during active closure, it is DOE's desire that as many areas of the site ultimately be made available for public use and public education as possible, consistent with maintaining the ecological resources. DOE has asked that the Service evaluate the amount and type of public access that the land and resources will bear as part of the Service's ongoing cooperative management of Rock Creek Reserve. All reasonable alternatives for public use will be discussed with the local communities and community preferences for public use will be sought prior to opening the Site for public access. Rocky Flats Mission Considerations in relation to public access is discussed in Section 3.7.2.

Proposed Action

- Continue with the existing management policy for public tours and visits for the life of this Plan.
- Analyze public visitation options for post-closure through an Access and Recreation Study. This

study will analyze the impacts of recreation and become the basis for recommendations on public access compatible with the future use of the land.

- Conduct contaminants sampling and analysis to support a potential National Wildlife Refuge designation. This will help comply with Service requirements through incorporation of a Service Level III contaminants study to identify potential contamination in Rock Creek Reserve. This will be prepared in cooperation with the Service's Environmental Contaminants Division. The Service's Level III portion of the study will be accomplished by the Service.
- Expand Rock Creek Reserve to 1700 acres (Fig. 2).

Options Considered But Not Selected

For the intended life of this Plan, there are no other options that are applicable. Continued need for a safety and security buffer zone by Rocky Flats requires continued limitation of public access until nuclear material is removed. In addition, the existence of a federally-listed, threatened species will continue to require protection of the habitat. If conditions warrant, or Congress mandates it, the area could become part of the USFWS Refuge System. If refuge designation occurs, management direction may change to meet the needs of the Refuge System. These options cannot be analyzed at this time since the future use of the Site has not been decided, and current restrictions are in place. Public comments have mainly focused on hiking and horse trails through the site. These will be analyzed in the Access and Recreation Study to be initiated under the Proposed Action.

No Action

No action would not allow for the study and planning of future public access to the Site and contaminants studies. This would not be conducive to good public access management decisions. Not expanding the boundaries of Rock Creek Reserve would not allow for good watershed management techniques since only part of the watershed would be included in the Rock Creek Reserve (see Section 1.3.2 for a more detailed analysis).